A2 (concluded) color adjustment, a desired print whose set colors are automatically stored can be provided.

REMARKS

Favorable consideration of this application is respectfully requested.

Claims 1-26 are currently active in this case. Claims 1-17 have been amended and Claims 18-26 have been added by way of the present amendment. Each new and amended claim is supported by the specification and claims as originally submitted and no new matter has been added.

In the outstanding Official Action, the Abstract was objected to based on an improper two paragraph format. The specification was objected to as lacking antecedents for a "desired number of columns". Claims 1-17 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite; Claims 1-4, 6, 8-12, 14 and 16 were rejected as being unpatentable under 35 U.S.C. §103(a) over *Murai* (U.S. Patent No. 4,962,421 in view of *Ikemoto et al.* (U.S. Patent No. 5,902,053, hereinafter *Ikemoto*); Claims 5, 7, 13 and 15 were rejected as being unpatentable under 37 U.S.C. §103(a) over *Murai* and *Ikemoto* in further view of *Kanamori et al.* (U.S. Patent No. 5,504,821, hereinafter *Kanamori*); and Claim 17 was rejected as being unpatentable under 35 U.S.C. §103(a) over *Murai* and *Ikemoto* in further view of *Tsuboi et al.* (U.S. Patent No. 4,958,221, hereinafter *Tsuboi*).

Regarding the objection to the Abstract, Applicants have amended the abstract to be a single paragraph not exceeding 150 words in length. Accordingly, Applicants respectfully request that the object to the abstract be withdrawn.

Regarding the objection to the specification for failing to provide an antecedent basis for several of the claims, particularly those reciting "for a desired

number of columns," the specification has been amended to include direct reference to the requested antecedent basis. The changes to the specification are supported in Fig. 5, the claims, and other text descriptions in the specification as originally submitted and no new matter has been added.

Regarding the objections to the claims, the additional period in Claim 1 has been removed, and each occurrence of "the desired number of frames," in each of Claims 5, 7, 14, and 15 has been amended to "a number of frames," or an antecedent has been provided in a parent of the objected claim (e.g., antecedent basis provided in Claim 6 for objected Claim 7). Accordingly, Applicants respectfully request that the objections to the claims be withdrawn.

Regarding the rejections of Claims 1-17 under 35 U.S.C. §112, second paragraph, the language cited as being indefinite, "a desired number of columns", has been removed from each of the independent claims and appropriate corresponding amendments to the dependent claims have been entered. Applicants believe that the amended claims are definite as required under 35 U.S.C. §112, second paragraph.

Applicants respectfully traverse the rejection of Claim 1 under 35 U.S.C. §103(a) as being unpatentable over *Murai* in view of *Ikemoto*. Claim 1 recites:

> ***1. A printer, comprising:***
> ***an image processing means for,***
> ***storing a plurality of gamma data in an updateable table,***
> ***each of the plurality of gamma data being different from each other in a value on which a color appearance characteristic of a printing media depends, and***

converting an image composed of R, G, and B signals to a set of Y, M, and C complementary-color images, each image being converted using one of the plurality of gamma data;

means for selecting a best of the set of Y, M, and C complementary color images; and

means for adjusting a printing process of the printer with the gamma data used to convert the selected best Y, M, and C complementary color image.

However, the combined referenced of *Murai* and *Ikemoto* fail to teach or suggest similar subject matter.

Applicants respectfully traverse the assertion in the outstanding Official Action that *Murai* teaches "an image processing means having a memory means (60) that stores a plurality of data different from each other in gamma value upon which the color appearance characteristic of the printing medium depends." As a preliminary matter, Applicants respectfully note that the memory means (60) of *Murai* (e.g., as shown in Figure 6) is used for storing input data which is an image to be output at the color printer 66 (e.g., see column 7, lines 2-5, and lines 60-64). And, Applicants have been unable to find any indication in *Murai* that the memory (60) is used for storing gamma data different from each other. Furthermore, if gamma data is stored in the memory (60), it would apply to the entire image, and not be gamma date different from each other.

More importantly, Applicants respectfully note that *Murai* only teaches the application of color balance techniques to the output image. The techniques are described for example in graphics 13A, 13B, and 13C (discussed in column 10, lines 4-17). The graphics are then stored in PROM80 and applied to the output

images via an image processing means (column 10, lines 18-26) according to a mode selection. However, *Murai* fails to teach or suggest *"gamma data in a table, each of the plurality of gamma data being different from each other in a value in which a color appearance characteristic of a printing media depends."* In contrast, Applicants' Claim 1 specifically recites an image processing means for *"storing a plurality of gamma data in a table, each of the plurality of gamma data being different from each other in a value on which a color appearance characteristic of a printing media depends."*

In addition, Applicant's respectfully note that *Ikemoto* only discusses printing techniques as applied to pixels in a main scanning and sub scanning directions (e.g., Abstract, and Fig. 7, etc.). However, nothing in *Ikemoto* teaches or suggests the above described differences between *Murai* and the claimed invention. Accordingly, Applicants respectfully submit that Claim 1 is patentable because neither *Murai* nor *Ikemoto* teach or suggest similar subject matter.

Regarding Claim 3, Applicants also respectfully traverse the assertion that *Murai* (in Figs. 6-7 and columns 8-9) teach an image processing means that calculates a "plurality of data different in gamma value from each other with reference to a reference image." Again, Applicants respectfully note that the memory (60) as depicted in Figures 6 and 7 only stores the image, or a part of the image that is to be output. The image to be output is provided to the memory (60) can then read from the memory (60) and operated on by various parts of the imaging processing chain as shown in Figure 6. In contrast, in the present invention, and as recited in Claim 3, the image processing means "calculates the plurality of gamma data with reference to a reference image." Thus, the gamma data is calculated based on a referenced image, a feature neither taught nor discussed by *Murai*. Accordingly, Applicants respectfully note that Claim 3 is yet further distinguished from *Murai*.

Regarding Claim 5, Applicants respectfully note that the cited reference notes main scanning and sub scanning directions but fails to teach or suggest division of the image into those directions such that a number of columns for display of the frames. Regarding Claim 6, neither *Murai* nor *Ikemoto* teach or suggest determining a number of frames for output using the plurality of data. Accordingly, Applicants respectfully submit that Claims 5 and 6 are further distinguished from the cited references.

Claim 9 is a method that includes storing different data, converting a video signal selecting a desired one of the converted video signals, and adjusting colors of an output image based on the selected image. Applicants respectfully note that the step of storing the plurality of different data is performed "in an updated table." And, after a close review of *Murai*, Applicants respectfully note that PROM80 (e.g., see Fig. 14) provides storage for a graphical color balance above. However, even if *Murai*'s graphical color balance is equated to the plurality of different data, the PROM80 is not an updateable table, in that information stored in the PROM is fixed. More importantly, Claim 9 specifically recites storing the "plurality of data different from each other in a value on which a color appearance characteristic of the printing media depends" in an updateable table, but *Murai* only provides a color strength adjuster that operates according to color strength characteristic lines and a mode selection (e.g., col. 9, line 66 – col. 10, line 26)

Claim 10 is further distinguished by specifically reciting that plurality of data different from each other are gamma values. And, Claim 11 is even further distinguished by including the step of updating the table with a set of gamma values based on a reference image. Neither *Murai* nor *Ikemoto* suggest producing gamma values based on a reference image, let alone updating the table based on newly produced gamma values. Similar limitations discussed in Claims 1-8 are also

present in various other of method Claims 10-17 further distinguishing those claims from the cited references.

Applicants respectfully note Claim 17 which includes "prompting the user to select one of positions of on a monitor screen, each position corresponding to one of the plurality of images printed on the printing paper." However, the cited references fail to suggest similar subject matter.

Applicants respectfully traverse the assertion in the outstanding Official Action that *Tsuboi* teach prompting a user to select one of positions on a monitor screen, each position corresponding to one of the plurality of images printed on the printing paper. *Tsuboi*, at column 8, lines 22-44 discusses a mosaic monitor mode wherein the "operator selects an image having a desirable color balance among the mosaic monitor images" (column 8, lines 31-32). However, the selection in *Tsuboi* relies entirely on images printed on a operational panel 70 displayed on an operation panel 70, and in fact are images from which the selection is to be made. In contrast, as claimed in Claim 17, the selection is made of "one of positions on a monitor screen, each position corresponding to one of the plurality of images printed on the printing paper." Thus, *Tsuboi* lacks the interaction between the images printed on the paper corresponding to positions on the monitor screen (the position being distinguished from the image). This feature is particularly valuable to Applicant's invention because it provides a level of abstraction from the printed image and the selected position (e.g., the image need not be repeated on the selection device). Accordingly, Claim 17 is yet further distinguished from all the cited references.

Turning now to new Claim 22, Applicants respectfully submit that new Claim 22 includes a combination of features of the present invention that are neither taught nor suggested by the cited prior art references. Claim 22 recites:

22. A method comprising the steps of:

storing a plurality of data different from each other in a value on which a color appearance characteristic of a printout depends;

selecting, by a user, an important area of a subject image;

creating a plurality of test images, each test image being created by applying an individual one of the data to the important area of the subject image;

printing the test images;

outputting a set of markers, each marker corresponding to one of the printed test images, on a display screen;

retrieving a user selection of the markers; and

applying the data used to create the test image corresponding to the selected marker to a printing operation.

Most notably, Claim 22 includes storing differences data, selecting an important area of a subject image, creating a plurality of test images using the important area and the difference data, printing the test images, and outputting a set of markers corresponding to the printed test images on display screen. A marker is then retrieved and the corresponding difference data used to create the corresponding test image related to the test marker retrieved is used in a printing operation. As noted above, with respect to Claim 17, *Tsuboi* fails to teach or suggest a similar selection manner to identify and utilize difference data from a printed test image.

Thus, in all the independent claims above, the present invention provides for a plurality of a same image printed using different data that affects the appearance of the printout on the paper being printed, this same image is selectable by a user,

and the image with the best printout is selected and the different data from that printout is utilized in further printouts.

Each of independent Claims 1, 9, and 22 incorporate one or more of these patentable features (Claim 22 incorporating all of them), and/or other features also believed to be patentable as discussed above. Accordingly, Applicants respectfully submit that the independent Claims 1, 9, and 22 are patentable over the cited references. Based on the patentability of the independent claims, and other reasons noted above with respect to certain of the dependent claims, Applicants further respectfully submit that dependent Claims 2-8, 10-21, and 23-28 are also patentable.

Consequently, no further issues are believed to be outstanding, and it is respectfully submitted that this case is in condition for allowance. An early and favorable action is respectfully requested.

Respectfully submitted,

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Appendix 1
Version with Markings to Show Changes Made

In the Specification

The entire second paragraph on page 9, line 14 has been replaced with the following rewritten paragraph:

In addition, a desired number of frames in a desired number of columns is printed. In the above embodiment, the images or frames in the print, different in hue from each other, count 25 in number. As illustrated in Fig. 5, the desired number of columns is 5 by 5 rows for the total of 25 times. However, the number of the printed frames, namely, 25 frames, is just a not-limitative one. It may be 9, 49, 16 or 36 frames, for example.

In the Claims

Claims 1-17 have been amended as follows:

1. (Amended) A printer [to print a video signal using printing media including a printing ink ribbon and paper, the printer], comprising:

an image processing means for,

storing a plurality of gamma data in an updateable table, each of the plurality of gamma data being different from each other in a value on which [the] a color appearance characteristic of [the] a printing media depends, and

converting [, using the plurality of data,] an image composed of R, G, and B [video] signals [based on the video signal] to a set of Y, M, and C complementary-color images, each image being converted using one of the plurality of gamma data [consisting of a desired number of columns];

means for selecting a best of the set of Y, M, and C complementary color images; and

means for adjusting a printing process of the printer with the gamma data used to convert the selected best Y, M, and C complementary color image [an output from the image processing means using the printing media.].

2. (Amended) The printer as set forth in claim 1, wherein the table comprises [image processing means has] a memory means in which there is stored the plurality of gamma data different from each other in gamma value upon which the color appearance characteristic of the printing medium depends.

3. (Amended) The printer as set forth in claim 2, wherein the image processing means calculates the plurality of gamma data [difference in gamma value from each other] with reference to a reference image and changes the addresses of the data in the memory means.

4. (Amended) The printer as set forth in claim 1, wherein the image processing means has a complementary color converter in which the R, G, and B image[s are] is converted to the set of Y, M, and C complementary-color images being in the complementary relation with the R, G, and B image[s and further to Y, M, and C complementary-color images for the desired number of columns].

5. (Amended) The printer as set forth in claim 4, wherein the conversion to the Y, M, and C complementary-color images for [the] a desired number of frames is effected by an image dividing means which divides the Y, M, and C complementary-color images by [the] a hardware capability of the image processor in a main scanning direction and by [the] a software capability of the image processor in a sub scanning direction to generate Y, M, and C images for [the desired] a number of columns for display of the frames.

6. (Amended) The printer as set forth in claim 1, wherein:

the [image processing means has] table is a memory means in which there is stored the plurality of data different from each other in a gamma value upon which the color appearance characteristic of the printing medium depends, and a complementary color converter in which the R, G, and B image[s are] is converted to Y, M, and C images being in [the] a complementary relation with the R, G, and B image[s]; and

the image processor includes means for determining a number of frames for output of the [further to] Y, M, and C complementary-color images [for the desired number of columns] using the plurality of data.

7. (Amended) The printer as set forth in claim 6, wherein the conversion to the Y, M, and C complementary-color images for the [desired] number of frames is effected by an image dividing means which divides the Y, M, and C complementary-color images by the hardware in a main scanning direction and by the software in a sub scanning direction to generate Y, M, and C images [for the desired] to determine a number of columns to be used to output the frames.

8. (Amended) The printer as set forth in claim 1, wherein the [printing medium] printer includes a sublimation ink ribbon and the media includes printing paper.

9. (Amended) A color adjusting method for use in a printer to print a video signal using printing media [including a printing ink ribbon and paper], the method comprising steps of:

storing a plurality of data different from each other in a value on which [the] a color appearance characteristic of the printing media depends in an updateable table; [and]

converting, using the video signal, an image composed of R, G, and B video signals based on the video signal to [a] complementary-color images [consisting of] to be output in a [desired] number of columns;

printing the set of complementary-color images as an output from the [image processing] converting step using the printing media;

selecting a desired one of the set of complementary-color images as [plurality of images] printed on [the] printing paper at the printing step; and

adjusting [the] colors of an output image according to the [desired] image selected at the selecting step.

10. (Amended) The method as set forth in claim 9, wherein at the [image processing] step of storing, the plurality of data different from each other [in] are gamma values upon which the color appearance characteristic of the printing [medium] media depends is stored.

11. (Amended) The method as set forth in claim 10, [wherein at the image processing step, the plurality of data difference in gamma value from each other is calculated with reference to a reference image and rewritten for storage] further comprising the step of updating the table with a set of gamma values based on a reference image.

12. (Amended) The method as set forth in claim 9, wherein at the [image processing] converting step, the R, G, and B images are converted to Y, M, and C images being in the complementary relation with the R, G, and B images and further to Y, M, and C complementary-color images for [the] a desired number of columns based on capabilities of an image processor performing the conversion.

13. (Amended) The method as set forth in claim 12, wherein the conversion to the Y, M, and C complementary-color images for the desired number of columns is effected by dividing the Y, M, and C complementary-color images by [the] a hardware capability of the image processor in a main scanning direction and by [the] a software capability of the image processor in a sub scanning direction to generate Y, M, and C images for the desired number of columns.

14. (Amended) The method as set forth in claim 9, wherein the plurality of data are different from each other in gamma value upon which the color appearance characteristic of the printing [medium] media depends, [is stored,] and the R, G, and B [images] are converted to Y, M, and C images being in the complementary relation with the R, G, and B image[s] and further to Y, M, and C complementary-color images [for the] in a desired number of frames using the plurality of data.

15. (Amended) The method as set forth in claim 14, wherein the conversion to the Y, M, and C complementary-color images for the desired number of frames is effected by dividing the Y, M, and C complementary-color images by [the] a hardware capability of the image processor in a main scanning direction and by [the] a software capability of the image processor in a sub scanning direction to generate Y, M, and C images for [the desired] a number of columns in which the converted images are to be output.

16. (Amended) The method as set forth in claim 9, wherein the printing [medium] media includes a sublimation ink ribbon and printing paper.

17. (Amended) The method as set forth in claim 9, wherein at the selecting step, the desired image is selected by prompting the user to select

[corresponding] one of positions on a monitor screen each position corresponding to one of the plurality of images printed on the printing paper.

Claims 18-26 have been added as follows:

18. (New) The printer according to claim 1, wherein said means for selecting comprises:

means for printing the set of Y, M and C complementary-color images in a test pattern;

means for outputting a selection pattern having a set of markers, each marker respectively corresponding to one of the test pattern images; and

means for identifying one of the markers corresponding to a best one of the test pattern images.

19. (New) The printer according to claim 18, further comprising means for updating the updateable table based on a reference image.

20. (New) The printer according to claim 19, wherein the table is updated by acquiring gamma data by calculation and storing each gamma data at addresses in the table.

21. (New) The printer according to claim 20, wherein:

the test pattern images are printed by updating a gamma value used for each line printed by changing an address that reads a corresponding gamma data from the table;

the address is changed in a sub-scanning direction by software; and

the address is changed in a main-scanning direction by hardware.

22. (New) A method comprising the steps of:

storing a plurality of data different from each other in a value on which a color appearance characteristic of a printout depends;

selecting, by a user, an important area of a subject image;

creating a plurality of test images, each test image being created by applying an individual one of the data to the important area of the subject image;

printing the test images;

outputting a set of markers, each marker corresponding to one of the printed test images, on a display screen;

retrieving a user selection of the markers; and

applying the data used to create the test image corresponding to the selected marker to a printing operation.

23. The method according to claim 22, wherein said step of applying the data comprises saving the data used to create the test image corresponding to the selected marker in a printer.

24. The method according to claim 23, wherein said step of storing comprises storing gamma data.

25. The method according to claim 23, wherein said step of storing comprises storing the data in an updateable table.

26. The method according to claim 23, wherein said step of storing comprises storing gamma data based on the subject image in an updateable table.

In the Abstract

The Abstract has been replaced with the following amended paragraph:

With [the] conventional analog [printer] printers, [the] ordinary [user is] users are experienced in the subtract color mixture for adjustment of image colors. Therefore, when adjusting the colors in an image displayed on a monitor of a video player and set by the additive color mixture, [the] a user [cannot make any color matching if he is not well] has difficulty if not familiar with the complementary relation between colors. The present invention proposes a printer and color adjusting method in which images of which a designated portion changed in color balance using a gamma (γ) data table in an image processor are printed in one printing paper and the user is prompted to select [his or her favorite] one of the images for storage in the printer[, thereby permitting to easily effect his desired color matching]. Thus, the user can select an image having colors he desires from images actually used and set the selected data into the printer. Thus, after the color adjustment, a desired print whose set colors are automatically stored can be provided.